

SUPPLEMENTAL INFORMATION: CORPORATE ISSUES SESSIONS

The “Corporate Issues” sessions vary in format – panels, workshops, presentations, interactive discussions, etc. As such, these sessions do not have a standard format for program descriptions beyond the brief summaries provided in the tabular agenda. This section provides supplemental material offered by several session organizers that may be helpful in better understanding their sessions.

SESSION II: Panel Presentation on Economic Value of Environmental Benefits

With ecosystem restoration now embedded as a primary mission of the Corps of Engineers and with a substantial proportion of our work focused on ecosystem restoration, the focus is shifting from can and how do we do these projects to how do we decide what is a good project and how do we decide what is the best project. This has led some to interest in applying benefit cost analysis to ecosystem restoration projects. In order to use benefit cost analysis, an economic value must be developed for the environmental services provided by the project. Many other agencies are also dealing with this issue and have large bodies of experience to share. This panel will include presentations from other Federal agencies on the techniques they use for valuing environmental services, lessons learned and new tools in their five year plans. Speakers will be from EPA, NOAA and Interior. Time for discussion will be included. This exposure to what is being done in other agencies will provide valuable sources of information, enhance local and regional working relationships and tie research to field work efforts.

SESSION II: CEQ NEPA Task Force Report – What Does It Mean to the Corps? / Environmental Operating Principles: 2004

This will be a split session, 45 minutes per topic:

CEQ NEPA Task Force Report – What Does It Mean to the Corps? Presented by Rich Fristik and Meg Smith, IWR.

The President’s Council on Environmental Quality (CEQ) formed a National Environmental Policy Act (NEPA) Task Force (TF) in April, 2002. The TF, comprised of a diverse group of Federal agency representatives, was to examine current NEPA implementation practices with the aim of modernizing and improving the NEPA process. Their examination focused on 7 areas:

- Technology and information management and security;
- Federal and intergovernmental collaboration;
- Programmatic analyses and tiering;
- Adaptive management and monitoring;
- Categorical exclusions; and
- Environmental assessments.

The TF reviewed literature, reports, and case studies, and solicited comment from Federal and state agencies, Tribes, state and local governments and other interest groups. Over 650 respondents provided comment. Based on the input received, the TF prepared a summary report with recommendations for action within each of the seven focus areas, as well as for a group of additional areas of consideration. The report was released in September 2003. Currently, CEQ is soliciting feedback on the report with the intent of prioritizing the recommendations for potential implementation beginning in February-March 2004.

This presentation will provide a brief summary of the report content and recommendations, describe the approach to and outcome of the prioritization process, and focus on the perceived implications of the priority recommendations to the Corps planning process and agency NEPA implementation.

Environmental Operating Principles 2004: A discussion of perspectives on the Environmental Operating Principles as they have developed and been implemented to date led by Beverly Getzen, Chief Environmental Planner, HQUSACE.

SESSION II: Regional Sediment Management - Applications of the Watershed Approach

The Civil Works Strategic Plan emphasizes a "watershed approach" in carrying out Corps programs, projects and activities. Regional sediment Management (RSM) has been identified as a good illustration of applying this approach because of its system perspective and framework, integration of Corps projects and activities, and emphasis on collaboration with the range of sediment stakeholders in the system. This session will provide an overview of RSM and presentation of district applications, including: the incremental analysis of dredged material placement, linking navigation channel maintenance w/placement of material on alternative beaches; the California Coastal Sediment Master Plan; use of Section 22 in identifying regional sediment management needs and opportunities in Florida; and, establishment of RSM PDTs to foster implementation of this approach in district studies, maintenance dredging and beneficial uses of dredged material.

SESSION II: Ecosystem Benefits Analysis

Session Topic: Environmental Benefits Analysis (EBA) for Ecosystem Restoration
Presenters Include Eugene Stakhiv, Lynn Martin, Paul Scodari and Richard Cole

This proposal is for a 90-minute session with a brief introduction showing the relevance to IWRM, followed by four presentations. Questions will be left to the end of the session. Also proposed is a poster-board presentation for the model selection protocol, which is introduced by the last presentation. Therefore, it is important to schedule this session before the poster-board discussion period is scheduled.

Introduction: This session summarizes the results of several studies that contribute to a proposed strategy for improving environmental benefits analysis (EBA) in ecosystem restoration projects. The First presentation provides describes concepts developed during study of EBA improvements. The second presentation summarizes conclusions from the EBA report and strategies recommended for improving EBA. The third presentation summarizes the policy implications of different interpretations of National Ecosystem Restoration, including its possible relationship to the concept of ecosystem services. The fourth presentation is an overview of a new reference to guide selection of ecosystem restoration planning models. We also propose that a poster board description of the model selection "protocol" summarized in the fourth presentation will be set up for people to read and discuss in the demonstration area.

First Presentation: Concepts of EBA for Ecosystem Restoration (Cole). This presentation summarizes concepts developed during investigation of EBA improvements. Unlike other water resource development purposes that require economic valuation of proposed developments, the contributions to national ecosystem restoration (NER) are to be formulated for and evaluated using nonmonetary outputs. The EBA improvement study confirms that the use of non-monetary indicators of benefit in cost-effectiveness and incremental analysis is most suitable when the number of metrics is reduced to as few as possible, either in single purpose applications or when jointly formulated with National Economic Development (NED) purposes. Ecosystem restoration appears to be motivated, either alone or in combination, by restoration of a more natural condition of self-regulation and sustainability, regardless of the specific resource and service conditions that result, or by restoration of specific services from resources regardless of the naturalness of the more natural condition. Two types of metrics were identified that appear most promising for indicating NER contributions and facilitating cost-effectiveness and incremental analysis based on either motivation alone or in combination. Both metrics are habitat-based biodiversity measures, one being a measure of common biodiversity indicative of a more natural

ecosystem integrity and the other being a measure of scarce biodiversity made up of nationally unique resources supporting services vulnerable to permanent loss. Regardless of NER utility, however, models and methods limited to habitat-based metrics fall short of indicating all functions of national interest, which is done better by the functional capacity indices of the Hydrogeomorphic Approach and by process simulation models. Process models have many other potential advantages for facilitating complete plans, but are generally more costly.

Second Presentation: A Strategy For Improving EBA for Ecosystem Restoration (Martin). This presentation summarizes the recommended strategies for future improvement of EBA. A three-phase strategy is proposed in which immediate, intermediate and long term objectives are defined. In the immediate future, important improvements include development of technical guidance for selecting planning models for ecosystem restoration projects, developing initial policy analysis of the National Ecosystem Restoration Concept with the long term intent to clarify policy, broadening staff proficiency in application of new tools as they are developed, and linking these developments with existing research programs, databases, and training programs. In the intermediate future, the Corps is advised to fundamentally rethink the NER objective and desired outputs as defined in policy, pursue simultaneous evaluation of all project outputs using ecosystem process simulation models at proper landscape scales, evaluate new analytical frameworks for NED/NER planning, and investigate development of an NER metric based on the scarce biodiversity. In the long run, the pursuit of improvements in economic methods should continue in pursuit of more comprehensive economic valuation of ecosystem services.

Third Presentation: Considering Different Concept Interpretations for NER. Following a recommendation from the EBA study, this study investigated the implications for NER evaluation associated with two conceptions of NER as a plan formulation concept. Analysis conducted during the EBA study revealed that two different approaches might be taken to formulating for and thus evaluating NER contributions: one based on a more natural condition, independent of specific ecological outcomes, and the other based on specific ecosystem outcomes, more or less independent of a more natural condition. Corps planning policy appears to allow either interpretation for formulation, but is less clear about evaluation.. While the significance determination might be facilitated by evaluation of specific ecological endpoints, evaluation of a more natural condition only requires some measure of a more natural ecosystem that is acceptable to all stakeholders in the process. In the first case, measurement of specific ecological endpoints are developed and used for evaluating resource significance and project worthiness. In the second case, the some measure of naturalness is used as a surrogate metric for general ecological outcomes instead of metrics of change for ecological results. The implications of these different perspectives on NER formulation and evaluation are explored for their usefulness in operationalizing an NER account.

Fourth Presentation: A Reference for Selecting Restoration Planning Models. Following a recommendation of the EBA study, a working draft of a new reference was developed to guide the selection of models for ecosystem restoration planning for Civil Works projects. Following introduction of purpose and concept, this reference presents a "protocol" to guide the model selection process, starting with Step 1 in the 6-step project planning process, culminating with Step 5, and linking back to existing policy at each step. The protocol starts with identification of the problems and objectives that guide the selection of model output(s) and indicate the dimensions of the influential ecosystem outlining needed model inputs. Model outputs that indicate significant resources are identified with the aid of the ecosystem service concept. A conceptual model, constructed in basic form during Step 1, is refined during Step-2 to facilitate inventory, to forecast the without-project condition, and to facilitate selection of quantitative models in later planning steps. Preliminary selection of quantitative models is advocated during the plan formulation of Step 3, using care not to limit the range of management measures selected by the type of model(s) selected. The strengths and weaknesses of different model types are described with respect to the complexity, funding levels, and risk tolerance associated with the project under study. Preliminary model selection is reappraised during plan evaluation and comparison in Steps 4 and 5. The results of this study facilitate improved uses of existing planning concepts and models, show how a good conceptual model is prerequisite, and further reveals model-improvement needs. We are refining the protocol through test application to ongoing feasibility studies.

SESSION IV: A Watershed Approach In Practice: 4 Key Concepts

Introduction to Session (with posters showing the Four Key Concepts from the Corps Strategic Plan.)

Moderator, L. Jean O'Neil, ERDC.

Purpose of session: to describe a workable approach to watershed planning based on four key concepts for applying watershed principles that are emphasized in the new Civil Works Strategic Plan, and to elicit audience input on a watershed notebook to facilitate their work. These principles apply across all functional areas and do not necessarily lead to a project but should lead to our participation with others in watershed-scale activities. These are common-sense concepts but very powerful when applied. The Four Key Concepts: Systems approach, Spatial or geographic integration, Balance across multiple uses or functions, and Collaborative approach.

A Watershed Framework: Technical Approach to Four Key Concepts. Barbara A. Kleiss, ERDC.

Purpose of session: to show the difference between a landscape / watershed study and a site-specific project, the key role that geospatial data play at either scale but especially the landscape scale, and the fact that we have a number of tools available for use and more on the immediate horizon. Example tools for each of the four concepts, e.g., remote imagery analysis for screening, system-wide geospatial databases, trade-off analysis, and conceptual models. Emphasis on how these can be applied by planners, water control managers, operations managers, lake managers, regulators, project managers, etc.

Illustration of the Four Key Concepts by District Experience. Jerry D. Jones, Mobile District.

Purpose of session: Districts are applying these concepts and have some successes, lessons learned, and some questions. Information from 3 Districts will be summarized.

A Watershed Notebook for Planning Watershed Studies. Steven L. Ashby, ERDC, with Donna Ayres, IWR.

Purpose of session: to begin production of an organized but living document to assist in watershed studies and plans. The handbook should be a how-to primer for anyone in the Corps to use to get a clearer understanding of what the watershed approach means and how to apply it in his/her work/role.

Questions from the audience on District Experience and other talks. Resource people in addition to the speakers will be present:

Audience input on ideas, lessons learned, and needs for the Watershed Notebook. Discussion will be captured. Notebook topics might include: Communication, Local participation, Funding, Policy, Guidance, Procedures, Planning process, Technical, Analysis, Training.

Closing comments.

SESSION VII: Submerged Aquatic Vegetation

PRESENTATIONS:

Title: Large-Scale Submerged Aquatic Vegetation (SAV) Research in the Chesapeake Bay

Presenters: Deborah Shafer, ERDC, and Bill Abadie, Baltimore District

Abstract: In many areas of the world, populations of submerged aquatic vegetation (SAV) have been declining. Since SAV is known to provide a suite of important ecological functions, including provision of critical habitat for many economically important fisheries species, restoration of SAV resources has become a priority in many areas. In the Chesapeake Bay region, attainment of the SAV restoration targets set by the Chesapeake Bay Program will require restoration of SAV on a larger scale than has been attempted in the past. Research to investigate new planting technologies, and more cost-effective options for planting, is critical to large-scale restoration success. A major advantage of this research effort is that it is being coordinated at the national level as part of a multi-agency partnership. The results of this research will be applicable not only within the Chesapeake Bay region, but to other areas as well.

Title: Propagation Strategies and Costs for Submersed Aquatic Plants Used for Revegetation Projects

Presenter: Steve Ailstock, Ph.D., Anne Arundel Community College Environmental Center

Abstract: Planting vegetation is a relatively recent tool of aquatic resource management. It has quickly become an effective approach for the creation of emergent wetlands because of the similarity of the physical environment and plant forms within wetland to those of traditional forestry and agriculture. These similarities allow direct application of the practices developed for traditional terrestrial plant culture to be applied directly to the new field of restoration ecology and the resulting costs can be comparable to those for restoration of terrestrial systems. In contrast, the creation of new underwater wetlands occurs in environments that are significantly different from those traditionally exploited for agriculture and the plant species of interest are physiologically unique. Still, there are fundamental similarities in all practices involving the human culture of plants. Principle among these is the need to propagate quantities of plant material of a kind that can meet the management objectives and the constraints of particular planting projects. Since the majority of species used in underwater habitat creation are perennial submersed aquatic angiosperms, three options exist for their propagation: seeds, transplants and use of modified stems adapted for dormancy. In parallel to traditional systems, the requirements for obtaining or producing these different structures in quantity vary, as does their particular application to the creation of new underwater wetlands. This paper describes the potential uses and limitations of each propagule type, the various systems that can be used for their production and the costs associated with both production and field establishment.

Title: Large-Scale Restoration of Submerged Aquatic Vegetation (SAV) on the Potomac River, Maryland: Comparison of Seedling Versus Vegetative Shoots

Presenters: Dave Goshorn, Ph.D., Maryland Department of Natural Resources

Abstract: The EPA Chesapeake Bay Program and its partners have committed to restoring 185,000 acres of submerged aquatic vegetation (SAV) in Chesapeake Bay by 2010. Aerial mapping in 2002 indicates that current acreage is slightly less than half of the goal. An SAV restoration strategy has been adopted by the Bay Program community that focuses primarily on nutrient reduction, but also identifies planting 1,000 acres of SAV in strategic locations by 2008. SAV planting on these scales has never been attempted before, and will require the development of many new technologies and techniques. Beginning

in September 2003, Maryland Department of Natural Resources began a three-year project on large-scale SAV techniques on the lower Potomac River. The project objectives are to carry out large-scale restoration of eelgrass at several sites on the Potomac River in locations identified as suitable by a two-year selection process; and compare the effectiveness of large-scale eelgrass restoration via vegetative shoots vs. seedling methodologies. The lower Potomac was chosen primarily based on the success of test plantings of adult plants. This is also the site of eelgrass vegetative shoot plantings in partial mitigation for SAV impacts resulting from the construction of the Woodrow Wilson Bridge replacement near Washington, DC. The results of the first year of effort, and plans for year 2 are presented.

SESSION VII: NAVIGATION EVALUATION FORUM

This forum will discuss current initiatives under the Navigation Economic Technologies (NETS) research program, recent model improvements (incl. HARBORSYM), and updates from the Navigation Data Center. Principals from these efforts will make presentations and lead discussions and Q & A.

Summaries of NETS efforts follow:

Navigation Economics Technologies (NETS) research effort is part of the Planning Models Improvement program. The NETS effort is charged with improving tools and techniques for Corps of Engineer navigation economic analysis. The program consists of a series of economic studies designed at providing a rigorous understanding of the economics underlying use of the waterways and the development of peer reviewed tools and models to evaluate proposed changes to the waterway. There are a number of studies that are initiated and on going. The items below provide descriptions of individual projects that relate to the Upper Mississippi river.

Mid-American Grain Study: This project is designed to assess the decisions of shippers to use the waterway. Professor Kenneth Train of the University of California at Berkeley and Professor Wesley W. Wilson of the University of Oregon and the Institute for Water Resources form the study team. The result will allow the spatial distribution of shippers using the waterway to be estimated as a function of terminal prices, transportation rates and attributes, and shipper characteristics e.g., distance to the waterway.

Revealed Choice Estimate of the Demand for Barges on the Mississippi River: This project is designed at estimating a fully identified econometric model of the barge market with a particular focus on the elasticity of demand. Professor Kenneth D. Boyer of Michigan State University and Professor Wesley W. Wilson of the University of Oregon and the Institute for Water Resources form the study team. The model consists of both the demand at the commodity level and the supply of barge services each identified at the pool level.

Global Spatial Equilibrium Forecasting Model: The purpose of this study is to illustrate the development of a spatial equilibrium model to forecast international commodity flows from a specific region. The methodology will be robust enough to provide credible projects in flows for 50 years. The uncertainties of key variables are will be explicitly considered. Distributions about these variables will be derived and integrated into the stochastic simulations. This type of uncertainty is especially relevant as the forecasting horizon lengthens. Forecasting with this type of uncertainty can be evaluated using "scenario analysis" and is an important component of the project motivation. The methodology will be illustrated by an application to the grain sector on the Mississippi river system.

Market Structure of the Barge Market – Supply Side Analysis: There has been extensive research on the inland waterway system. Most of the analysis has focused on the demand side of the market and on the estimation of the benefits and costs of Army Corp of Engineers (ACE) waterway projects. Generally, these analyses assume largely constant returns to scale and competitive pricing on the waterways. The goal of this project is to develop a basic understanding of the organization of the waterway carrier industry in terms of the structure, conduct and performance paradigm of industrial organization. (This study has not yet started.)

Spatial Equilibrium - Theory and Models: The objective of this work unit is to document the existing state of the art of inland navigation transportation modeling with respect to spatial equilibrium analysis. The identification of the data and methods needed to incorporate spatial equilibrium analysis into these models and the development of a design document to guide the next generation model development or enhancement.

Student Research: The NETS project also funds graduate students to provide research assistance to NETS research core members. These students also have or are developing their own dissertations and masters theses in NETS related areas. There are a total of five students involved in NETS related research, one of whom is also a Institute for Water Resources research economist. These students are located at the University of Oregon and at George Washington University. Their research is summarized below:

- **US Waterway System: A Brief Overview:** This study consolidates information from a wide variety of sources. It describes the waterway system in general and by river way system.
- **Alternative Approaches to Modeling Transportation Demand:** This is a relatively detailed review article of transportation demand. It outlines the alternative approaches and findings of transportation demand models appearing in the academic literature.
- **Congestion, Delays, and Technological Improvements: A Case Study of Lock Improvements:** This study is part of a longer-range project identifying the determinants of transit times on the river. This component focuses on the processing of tows through locks. This “processing time” is explained in terms of lock and vessel characteristics as well as the lock policies and river conditions.
- **Spatial Aggregation of River Shipments:** Grain movements on the waterway flow through river terminals who are located on but spatially separated along the waterway. These shippers face a set of prices for the product shipped, transportation rates and attributes. They often choose a “bid-price” e.g., the price that agricultural shippers pay farmers who are distributed over a geographic space. That price along with the prices of competitors, storage costs, etc. induce farmers and/or country elevators to ship to a given terminal on the river. Once at that location, the products flow down the river and largely explain the quantities flowing on the river. The purpose of the research is to develop a model of spatial competition among agricultural terminals located on the waterway. The result will explain the annual tonnage of each elevator on the river system.